CLAIM AMENDMENTS

IN THE CLAIMS

This listing of the claims will replace all prior versions, and listing, of claims in the application or previous response to office action:

1. (Currently Amended) A method of identifying fault conditions in an automation system**[[,]]** comprising ~~**the steps of**~~:

identifying components and sensors in the system,

identifying inputs to each identified component,

receiving outputs from said sensors;

determining functional relationships between the inputs and outputs for each identified component, ~~**and**~~

determining a weight value for a possible fault condition for each component based on said functional relationship; **and**

determining **a** fault condition**[[s]]** from said possible fault conditions based on said weight value**[[s]]**.

2. (Currently Amended) ~~**The**~~ **A** method **[[of]]** **according to** claim 1, further comprising the step of using the identified inputs and outputs of a specific component and sensors and the functional relationships of a corresponding generic component to identify ~~**the**~~ **a possible** fault condition**[[s]]**.

3. (Currently Amended) ~~The~~ A method **[[of]]** according to claim 2, further comprising the step of defining component libraries that describe the functional relationships of the generic component**[[s]]**.

4. (Currently Amended) ~~The~~ A method **[[of]]** according to claim 2, further comprising the step of creating a diagnostic program from the functional relationships of ~~the~~ a generic component**[[s]]** associated with each component.

5. (Currently Amended) ~~The~~ A method **[[of]]** according to claim 4, further comprising the step of transforming the functional relationships into fault conditions.

6. (Currently Amended) ~~The~~ A method **[[of]]** according to claim 5, wherein the step of transforming is implemented in an off-line phase during which the diagnostic program is created, and an on-line phase during which available inputs and outputs are supplied to the transformed functional relationships in the control program**[[,]]** to identify fault conditions.

7. (Canceled)

8. (Currently Amended) ~~The~~ A method **[[of]]** according to claim 1, further comprising the step of including state information for at least one of the components to define the state of the component at a different time.

9. (Currently Amended) A method of defining diagnostic code for an automation system**[[,]]** comprising ~~**the steps of**~~:

identifying the functional elements and associated sensors of the system;

defining inputs for each of the functional elements;

receiving outputs from said associated sensors

defining functional relationships between inputs and associated outputs for each functional element;~~**and**~~

expressing the functional relationships using a programming language;

determining a weight value for a possible fault condition for each functional element based on said functional relationship; **and**

determining **a** fault condition**[[s]]** from said possible fault conditions based on said weight value**[[s]]**.

10. (Currently Amended) ~~**The**~~ **A** method **[[of]]** **according to** claim 9, wherein the programming language is a symbolic language.

11. (Currently Amended) ~~**The**~~ **A** method **[[of]]** **according to** claim 9, wherein the step of defining functional relationships for at least some of the functional elements includes utilizing a component library that defines the functional relationships between inputs and outputs of at least one generic element.

12. (Currently Amended) ~~**The**~~ **A** method **[[of]]** **according to** claim 11, wherein the step of defining the functional relationships includes the step of defining

functional relationships and inputs and outputs of ~~the~~ **a** generic element**[[s]]** corresponding to the functional elements in the system.

13. (Currently Amended) ~~The~~ **A** method **[[of]]** **according to** claim 9, further comprising the step of including state information for at least one of the components to define the state of the component at a different time.

14.-19. (Canceled)